

REMARKS

Applicants and their undersigned attorney have carefully reviewed the first Office Action of February 18, 2005 in the above-identified patent application, together with the prior art references cited and relied on by the Examiner in the rejections of the claims. The present invention is not anticipated by, and is not obvious in light of, the prior art. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

The subject application discloses and claims a fully electric vehicle drive system that incorporates a flywheel to drive the vehicle. Hybrid vehicles, typically defined as those vehicles containing two drive systems, and fully electrical vehicles have been the focus of increasing attention and investment as consumers and environmentalists demand a vehicle that is clean, efficient, and minimizes the requirement to refuel or recharge. Hybrid vehicles are increasingly being introduced in commercial embodiments, and automobile manufactures are now contemplating hybrid vehicles that incorporate fuel cells in place of internal combustion motors. Fully electric vehicles, however, have been a commercial failure at least because each embodiment required the vehicle to be manually recharged (i.e., the consumer had to plug the vehicle into an electrical outlet or charging station). Outside of solar powered vehicles, Applicant is unaware of any fully electrical vehicles that have been able to operate for more than a few hours without requiring an external power source. Overall, there has been a long felt need for a vehicle that does not require refueling or external recharging.

Applicant, a sole inventor, has directed considerable resources to, and invested extraordinary time in, answering this long felt need, and the flywheel-driven vehicle of the present invention represents the result of this extensive research and development. In fact, Applicant has built and tested a working prototype of the claimed invention. The prototype successfully completed a 9-hour test on private property while maintaining an estimated average speed of approximately 40 miles per hour. Work has now begun on a second, more efficient prototype that will, ideally, be subject to road testing, including a cross country trip that will not require a stop to refuel. Applicant has set a target average speed of 65 miles per hour during the course of the trip. The vehicle, of course, does not provide perpetual motion, and it will be necessary to periodically install new batteries.

As disclosed, the subject invention includes a battery 38 (or set of batteries) to power an electric motor 10 that in turn drives a flywheel 16. A second battery 38 (or set of batteries) is included. The energy stored in flywheel 16 is transmitted to a vehicle drive system. An alternator 28 connected to a drive shaft 18 connects the vehicle's drive system to a charger assembly. The vehicle is constantly recharging one or both of the batteries (or sets of batteries) when the vehicle is in motion.

In more detail, alternator 28 provides electric current to a charger battery 30 (or set of charger batteries). Current from charger battery 30 then passes through an inverter 32 to convert the electric flow from DC to AC to thereby power cell charger 34 that is connected to and recharges battery(s) 38. The charging system is not driven by a motor, as an alternator is in a

conventional 12v car system. Nor does the charging system only recharge the system during braking, which is found in many fully electric vehicles. Instead, battery(s) 38 is/are charged while the vehicle is in motion.

In the Office Action of February 18, 2005, claims 1-8 were rejected under 35 U.S.C. 103(a). The rejections for claims 1-8 under 35 U.S.C. 103(a) were based upon Rowlett (U.S. Patent No. 4,233,858) and further in view of Weaver (U.S. 5,765,656) and Furukawa et al. (U.S. 6,392,380).

It is respectfully requested that the Examiner, upon further consideration of the claims rejected under 103, keep in mind that the proper application of the obviousness test of 35 U.S.C. 103 requires one to picture the person of ordinary skill in the art as having the references before him without any knowledge of applicant's invention. If the references themselves do not suggest the desirability of modifications necessary to the achieve an anticipation of a claim, they do not render the claimed subject matter obvious in the sense of 35 U.S.C. 103. The necessity of avoiding hindsight reconstruction was well stated by the Court of Customs and Patent Appeals in the case of In re Rothermel and Waddell, 125 USPQ 323 at 331 (1960), wherein the court noted:

The examiner and the Board in rejecting the appealed claims did so by what appears to us to be a piecemeal reconstruction of the prior art patents in light of appellant's disclosure...It is easy now to attribute to this prior art the knowledge that was first made available by appellants and then to assume that it would have been obvious to one having the ordinary skill of the art to make these suggested reconstructions. While such a reconstruction of the art may be an alluring way to rationalize a rejection of claims, it is not the type of rejection which the statute authorizes. 35

U.S.C. 103 is very specific in requiring that rejection on the grounds the invention would have been obvious must be based on a comparison between the prior art and the subject matter as a whole at the time the invention was made.

This requirement for a detached viewing of the teachings and suggestions of the references necessitates that Examiners study the references and determine what their teachings would be to a person who has not read applicant's application or read his claims. If the references are considered in the foregoing manner, it is most respectfully submitted that they do not provide a proper anticipation of the rejected claims under 103. The Examiner's rejections under 103 consist of statements identifying elements in the prior art and conclusively stating they suggest the elements of the present invention. Not only do the components not teach or suggest the claimed invention alone or in combination, but the Office Action does not provide a reason for modifying the references cited by the Examiner in the manner suggested by the Examiner **except** to arrive at applicant's specifically defined construction, taught only by applicant's disclosure. Even though the references do not suggest the claimed invention, the fact that Applicant is answering a long felt need is further confirmation that it was not obvious to combine the split torque flywheel drive system of Rowlett (issued in 1980) with the hybrid technology disclosed in Weaver and Furukawa et al. (issued in 1998 and 2002, respectively).

The claimed invention actually does not contain the components found in the more complicated, but less efficient, hybrid drives. Applicant notes, however, that simplicity does not mitigate against patentability. In fact, in

Universal Athletic Sales Company v. American Gym, Recreational and Athletic Equipment Corporation, Inc., 187 USPQ 104, the court stated, "We are cautioned that the mere simplicity of the device, though it may suggest obviousness, is not by itself a reliable test of obviousness, as many things will seem obvious when viewed with the advantage of hindsight." This is further supported by the contention of the Board of Patent Appeals and Interferences in Ex parte Clapp, 227 USPQ 972 at 973, wherein the Board, in reversing the Examiner, held "To support the conclusion that the claimed combination is directed to obvious subject matter, either the *references must expressly or impliedly suggest the claimed combination or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references*" (emphasis added). Applicant has been unable to find either an express or implied suggestion of applicant's claimed invention in the references and no reason has been put forward as to why the inventor would have found the claimed invention to have been obvious in light of the referenced patents, taken alone or in combination. In fact, the time period between the references issuing suggests it is anything but obvious to combine the disclosures.

Applicant also contends that hybrid drive systems are non-analogous art to the fully electric system of the present invention. The hybrid drive references do not have any apparent connection to the subject matter of the present invention, which operates without an external fuel supply.

Returning to the Examiner's 103 rejection, Claims 1-8 were rejected as obvious given Rowlett in view of Weaver and Furukawa et al. Rowlett illustrates a battery 22 to energize a generator 16. The generator then accelerates a flywheel 12 to a maximum speed.

Flywheel 12 in Rowlett then drives generator 12, which earlier acted as an electric motor. Generator 12 supplies current to a traction motor 18. "The torque for the generator 16 is supplied by the deceleration of the flywheel 12..." (Col. 4, line 63). Flywheel 12 also drives an output carrier shaft 44 via a planetary gear system 14 to create a split torque system. A battery charger 417 is shown for charging the battery "from AC mains when the vehicle is parked." (Col. 6, line 65). The flywheel is re-accelerated during deceleration of the vehicle (Col. 5, line 1). Rowlett also contemplates driving the vehicle completely via the battery and, alternatively, completely removing the battery from the system (see Col. 8). Not only does the subject invention not drive the vehicle through the deceleration of the flywheel, but both of the contemplated embodiments are antithetical to the present invention.

Rowlett does not disclose or suggest distinct batteries (or sets of batteries). Rowlett does not disclose or suggest an assembly for charging a battery during cruising or acceleration of the vehicle. In fact, the Rowlett system does not have any type of in-motion battery charging assembly, besides energy supplied from the flywheel during deceleration. Rowlett clearly does not disclose or suggest a charger, an inverter, a charger battery or an alternator, as is required by Claim 1 of the subject application. Rowlett also does not

suggest, explicitly or by implication, combining such a charger assembly with the invention taught in Rowlett. Rowlett does not suggest combining the disclosed drive system with a hybrid drive system, as is found in Weaver and Furukawa et al.

Rowlett also does not disclose or suggest a switch to change an electrical connection from a first state (where a first drive battery(s) and an electric motor are connected) to a second state (where a second drive battery(s) and an electrical motor are connected) as required by claim 2. Rowlett does not disclose or suggest a voltmeter to automatically control such a switch. Rowlett does not disclose or suggest a flywheel connected to a vehicle drive system through a set of variable speed sheaves as required by claim 8 of the subject application.

Weaver is relied upon to disclose the charger assembly of the present invention, save for a separate charge battery. Weaver discloses a hybrid drive system including a multiple battery powered motor driven vehicle that incorporates *a gas turbine and motor driven alternator*, which both supply power to charge the batteries. This defines the technical field of the invention (see Col. 1, lines 5-9). Clearly, the present invention is not within the same technical field so that Weaver should be considered non-analogous art that is not properly considered for a 103 rejection. Likewise, the invention of Furukawa relates to a power supply apparatus to drive a hybrid car.

Nevertheless, applicant identifies several distinctions between the charger assembly of the present invention and the assembly taught by Weaver. Weaver includes three charging sources 44, 52 and 54 that are connected in parallel (see Col. 6, lines 65-68). The first charging source is a *gas turbine* driven alternator 44. The second source is an motor driven alternator 52 that is belt driven from an opposed shaft on an *electric motor* 20. The final power source is an alternating current to direct current battery charger 54. Charger 54 utilizes conventional utility *power outlets*.

None of the charging sources disclose a charging assembly "wherein the alternator is connected to the vehicle drive system" as defined in the specification and required by Claim 1 of the subject invention. Rowlett contemplates charging via deceleration of the flywheel and Weaver contemplates charging through either a turbine driven alternator, electric motor driven alternator, or electrical power outlets. The charging options in Weaver clearly do not anticipate or render obvious the charger assembly of the subject application alone or in combination with Rowlett.

Weaver does not disclose or suggest a flywheel assembly. Nor does it suggest, explicitly or by implication, combining the hybrid drive system with a flywheel system. In addition, it does not disclose or suggest a voltmeter controlled switch to switch between batteries (or banks of batteries). Since Weaver does not include or suggest a flywheel, the specification also does not teach a set of variable speed sheaves required by claim 8 of the subject application.

Furukawa et al is relied upon to teach a charger battery within a charger assembly. However, Furukawa does not disclose or suggest an alternator connected to a vehicle drive system wherein the alternator energizes a charger battery when the vehicle is in motion. The cited battery to inverter connection at Col. 4, line 64 discusses a charging circuit whereby an automotive battery is charging a driving battery. The two batteries have different voltages so the charging circuit 7 includes a step-up inverter to increase the DC voltage of the automotive battery 5 to a DC voltage capable of charging the driving battery 2. The inverter in the subject application takes the current from the alternator-energized charging battery and converts the electric flow from DC to AC. The inverter in the present system is, therefore, connected to a charger that is not present in Furukawa.

Col. 5 at lines 45-67, as cited in the Office Action, discloses that the charging circuit 7 contains "an inverter which steps down driving battery 2 voltage to the charging voltage of the automotive battery." The cited language discusses that charging circuit 7 can charge the automotive battery 5 extremely efficiently compared to an alternator. Charging the automotive battery in Furukawa has nothing to do with charging the battery(s) 38 of the present invention because in Furukawa the driving battery 2, not the automotive battery 5, is the battery that motivates an electric motor. Namely, an inverter 4 (not found in the charging circuit 7) converts DC power from driving battery 2 to an AC to drive the electric motor 3. The cited language does not disclose or suggest the charger assembly of the present invention. A motivation to combine the Furukawa system with the system found in Weaver,

Even if a basis for combining the references were put forward, the combination clearly does not teach or suggest in any combination the flywheel drive system of the present invention. Quite simply, the cited references do not expressly or impliedly suggest the claimed combination, and the Examiner has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. The only reason offered for combining the references is to arrive at the Applicant's claimed invention. This hindsight reconstruction of the references is impermissible.

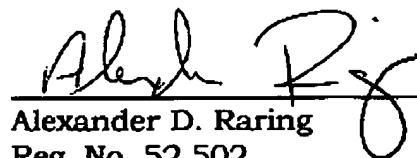
Applicant further reiterates that hybrid technology is non-analogous art as it is not within the field of the Applicant's endeavor and is not reasonably pertinent to the particular problem the inventor was solving (see, e.g., In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986)). However, even construing the references in the light most favorable to the Examiner, the references still do not teach or suggest the flywheel drive system found in the subject application.

For one or more of the foregoing reasons, it is believed that pending claims are patentable over the prior art cited and relied upon in the Office Action. As such, reconsideration and re-examination of the application, allowance of the claims, and the passage of the application to issue is respectfully requested.

The Commissioner is hereby authorized to charge any deficiencies in payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-2127.

Date: April 11, 2005

Respectfully submitted,

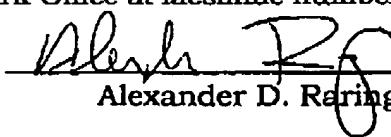
  
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I hereby certify that this paper is being facsimile transmitted to Examiner Kelly E. Campbell at the Patent and Trademark Office at facsimile number (703) 872-9306. on the date shown below.

  
Alexander D. Raring

Date: April 11, 2005